

WHAT IS CLAIMED IS:

## 1. A high-intensity discharge lamp, comprising:

a lighting-source bulb provided with a light-transmissive ceramic  
5 discharge enclosure containing an enclosure defining a discharge space  
and a pair of small-diameter cylinders communicating with the  
enclosure at both ends thereof and having an inside diameter smaller  
than the enclosure, a pair of slender electrodes extending through the  
small-diameter cylinders of the light-transmissive ceramic discharge  
10 enclosure in leaving narrow gaps between the inside surfaces of the  
small-diameter cylinders and the electrodes and discharge agent filled  
in the light-transmissive ceramic discharge enclosure;

a metallic coil which is wound on at least one of the small-diameter  
cylinders through which one of the electrodes extends, and which is  
15 coupled to the other end of the electrode to have the same potential with  
the electrode;

a jacket-bulb which hermetically accommodates therein the  
lighting-source bulb and the metallic coil; and

a pair of outer lead terminals which are coupled to the pair of  
20 electrodes and hermetically led outside the jacket-bulb.

## 2. A high-intensity discharge lamp, comprising:

a lighting-source bulb provided with a light-transmissive ceramic  
discharge enclosure containing an enclosure defining a discharge space  
25 and a pair of small-diameter cylinders communicating with the  
enclosure at both ends thereof and having an inside diameter smaller

than the enclosure, a first and a second slender electrodes extending through the small-diameter cylinders of the light-transmissive ceramic discharge enclosure in leaving narrow gaps between the inside surfaces of the small-diameter cylinders and the electrodes and discharge agent  
5 filled in the light-transmissive ceramic discharge enclosure:

a first metallic coil which is wound on the outside surface of the one end of the small-diameter cylinder wherein the first electrode is inserted through, and which is coupled to have the same potential as the second electrode;

10 a second metallic coil which is wound on the other small-diameter cylinder through which the second electrode extends, and which is coupled to the first electrode to have the same potential as the electrode;

a jacket-bulb which accommodates the lighting-source bulb and the first and the second metallic coils hermetically; and

15 a pair of outer lead terminals which are coupled to the first and the second electrodes and hermetically led outside the jacket-bulb.

### 3. A high-intensity discharge lamp, comprising:

a lighting-source bulb provided with a light-transmissive ceramic  
20 discharge enclosure containing an enclosure defining a discharge space and a pair of small-diameter cylinders communicating with the enclosure at both ends thereof and having an inside diameter smaller than the enclosure, a pair of slender electrodes extending through the small-diameter cylinders of the light-transmissive ceramic discharge  
25 enclosure in leaving narrow gaps between the inside surfaces of the small-diameter cylinders and the electrodes and discharge agent filled

in the light-transmissive ceramic discharge enclosure;

5 a first metallic coil which is wound on the outside surface of the one end of the small-diameter cylinder wherein one of the electrodes is inserted through, and which is coupled to the other electrode to have the same potential as the electrodes;

a second metallic coil which is wound on the other small-diameter cylinder wherein the other electrode is inserted through;

a jacket-bulb which accommodates the lighting-source bulb and the first and the second metallic coils hermetically; and

10 a pair of outer lead terminals which are coupled to a pair of electrodes and hermetically led outside the jacket-bulb.

4. A high-intensity discharge lamp as claimed in any one of claims 1 to 3, wherein the metallic coil is wound on the small-diameter cylinder  
15 more than four turns.

5. A high-intensity discharge lamp as claimed in any one of claims 1 to 4, wherein, one end of the metallic coil is placed near the boundary of the enclosure of the light-transmissive ceramic discharge enclosure.  
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6. A high-intensity discharge lamp as claimed in any one of claims 1 to 5, wherein, the winding pitch of the metallic coil resides in the range of 100 % to 500 %.

25 7. A high-intensity discharge lamp as claimed in any one of claims 1 to 6, wherein the value of  $L1/L2$  will be 0.3 to 1.0, when the length of

the metallic coil is denoted as L1 and the length of the small-diameter cylinders of the light-transmissive ceramic discharge enclosure is denoted as L2.

5        8. A high-intensity discharge lamp as claimed in any one of claims 1 to 7, wherein the metallic coil which resides in a side opposite to the enclosure of the light-transmissive ceramic discharge enclosure is coupled to the opposite side electrode to have the same potential as that of the electrode.

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9. A high-intensity discharge lamp as claimed in any one of claims 1 to 8, wherein the electrostatic capacitance across the pair of outer lead terminals are among 1.2 to 4 pF.

15        10. A high-intensity discharge lamp as claimed in any one of claims 1 to 9, wherein the electrode is providing the metallic coil, which is wound on at least one part of its axis facing to the metallic coil.

20        11. A high-intensity discharge lamp lighting system, comprising:  
a high-intensity discharge lamp as claimed in any one of claims 1 to 10; and

a lighting circuit which is made by principally an inverter for lighting the high-intensity discharge lamp at a high frequency region.

25        12. A lighting appliance, comprising:  
a lighting appliance principal body, and

a high-intensity discharge lamp lighting system as claimed in claim  
11 which is mounted on the lighting appliance principal body.